Combat Burn Life Support: A Military Burn-Education Program

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The Advanced Burn Life Support Course has been used to train military physicians and nurses for more than 16 years. Although it useful for teaching the fundamentals of burn care, the course is designed for a civilian audience, covers only the first 24 hours of burn care, and presumes the availability of a burn center for patient transfer. In preparation for hostilities in Iraq, we developed several add-on modules to the standard Advanced Burn Life Support course to meet specific needs of military audiences. These modules cover the treatment of white phosphorus burns; the treatment of mustard gas exposure; the long-range aeromedical transfer of burn patients; the management of burn patients beyond the first 24 hours; and the delivery of burn care in austere environments. These add-on modules are termed Combat Burn Life Support. Between January 22, 2003, and May 12, 2003, Advanced Burn Life Support and/or Combat Burn Life Support courses were provided to a total of 1035 military health care providers in the United States, Germany, and the Middle East. Student feedback was largely positive and is being used for further course refinement. The Combat Burn Life Support Course is designed to augment, rather than replace, the Advanced Burn Life Support Course. Although intended for a military audience, the course material is equally applicable to civilian terrorist or mass casualty situations. (J Burn Care Rehabil 2005;26:162–165)

Before the start of Operation Iraqi Freedom, a working group was assembled at the US Army Institute of Surgical Research to plan for burn support. It soon became apparent that burn care plans that were successfully used during Operation Desert Storm would not be applicable to the present conflict. Change of military doctrine dictated that medical care would have to be more expedient and mobile. Out of necessity, some burn care would be provided by trauma teams rather than by burn teams. The use of chemical weapons against Allied troops was expected. Chemical weapons were known to have been previously used by the opposing forces, including sulfur mustard, a powerful vesicant that produces a chemical burn injury. For this reason, the Army Burn Center was designated by the US Army Surgeon General as the treatment center for severe mustard gas injuries.

These realities created a new role for the army burn care team. In addition to being burn care providers, we needed to increase our efforts as burn care educators. Our Burn Center team needed to be trained in the treatment of mustard gas injuries. The deploying medical units headed for the Gulf needed refresher training in all aspects of military burn care.

Examination of existing curricula revealed that no present course exactly fit these needs. The Advanced Burn Life Support course[1] reflects the national standard of care for burn medicine and has been taught to military physicians and nurses for at least 16 years. Although the basics of burn care are well covered, this course does not cover treatment of injury from chemical munitions, nor does it cover burn care after the first 24 hours. The Advanced Burn Life Support course assumes the availability of sufficient medical

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supplies and of a regional burn center to accept transfers. Burn care in war may be performed under austere conditions, and battlefield contingencies may prevent the transfer of burned patients out of the theater for several days.

The skin manifestations of mustard gas exposure mimic those seen in toxic epidermal necrolysis and the lung manifestations are similar to smoke inhalation injury, making the burn center the ideal setting for treatment of vesicant injury. Several excellent courses addressing the battlefield management of sulfur mustard injuries were identified.[2,3] Unfortunately, no course addressed the management of mustard gas injuries by burn care providers in definitive care settings. To complete our new mission, military-specific burn curricula would have to be developed.

METHODS

Recognizing the utility of the existing Advanced Burn Life Support Course, the planning team sought to augment, rather than replace, the basic course. Terrorist attacks, releases of chemical weapons, and burn mass casualty incidents are real possibilities in both military and civilian burn practice, and the planning team chose to concentrate on topics that would be useful for both military and civilian settings. Modules covering the treatment of white phosphorus injuries, burn center management of mustard gas injury, long-range aeromedical transfer of burn patients, care of the burn patient after the initial 24 hours, and burn care under austere conditions were developed. Additional modules covering burn mass casualty incidents, injuries

Table 1. Courses delivered, January to May 2003

Date	Organization	ABLS	CBLS
January 22, 03	86th Combat Support Hospital	3	3
January 24, 03	212th Mobile Army Surgical Hospital	3	3
January 30, 03	Ft. Bragg	10	2
January 30, 03	86th Combat Support Hospital		2
January 30, 03	Landstuhl Army Regional Medical Center	40	40
January 31, 03	Landstuhl Army Regional Medical Center	45	45
February 2, 03	National Navy Medical Center/USS Comfort	18	50
February 4, 03	B Company, 28th Combat Support Hospital	4	4
February 4, 03	Madigan Army Medical Center	3	3
February 4, 03	Walter Reed Army Medical Center	2	3
February 4, 03	115th Combat Support Hospital	3	3
February 4, 03	Combat Support Hospital		1
February 13, 03	National Navy Medical Center/USS Comfort		6
February 20, 03	Persian Gulf	33	30
March 3/4, 03	115th Combat Support Hospital	40	
March 12, 03	Brooke Army Medical Center		40
March 12, 03	21st Combat Support Hospital		45
March 14, 03	Brooke Army Medical Center		40
March 14, 03	115th Combat Support Hospital		42
March 18, 03	5501st US Army Hospital, 94		77
March 19, 03	Brooke Army Medical Center		40
March 19, 03	111th		45
April 9, 03	Brooke Army Medical Center/Inst Surgical Research	36	
May 1, 03	Darnell Army Community Hospital		90
May 7, 03	Brooke Army Medical Center/Inst Surgical Research	11	
July 2, 03	Brooke Army Medical Center/Inst Surgical Research	23	
August 6, 03	Brooke Army Medical Center/Inst Surgical Research	23	
September 24, 03	Brooke Army Medical Center/Inst Surgical Research	18	
January 29, 04	Brooke Army Medical Center/Inst Surgical Research	35	
March 11, 04	Brooke Army Medical Center/Inst Surgical Research	31	
May 12, 04	Task Force 168	20	20
Subtotal		401	634
Total			1035

ABLS, Advanced Burn Life Support; *CBLS*, Combat Burn Life Support.

from unconventional weapons (nuclear, thermobaric or fuel-air explosives), and military burn prevention were planned but not implemented because of time limitations. These additional modules are currently in development.

The modular design allows instructors to tailor course content to student requirements. During the course of a typical Reserve training weekend, a deploying medical unit can complete the regular ABLS course on a Saturday and the five available Combat Burn Life Support modules on a Sunday. A civilian burn center might wish to add the mass casualty, vesicant injury, and unconventional weapons modules on the second day of a standard ABLS course. Alternately, the add-on modules also could be used for a weekly lecture series for prehospital or burn center staff who have already completed ABLS training.

RESULTS

Five modules of instruction were developed as MicroSoft Powerpoint™ (Redmond, WA) presentations. The white phosphorus treatment module included a short video clip demonstrating smoldering white phosphorus particles within a wound. The training materials were first delivered to a class of military health care providers on January 22, 2003. Student feedback was used to continuously refine the teaching materials during a 3-month period.

Between January 22, 2003, and May 12, 2003, teams from the Army Burn Center taught Advanced Burn Life Support and/or Combat Burn Life Support to more than 1000 military health care providers (Table 1). Most students were in medical units that stopped in San Antonio, Texas, for refresher training en route to the desert. Training teams also delivered these courses to medical units already deployed in the Middle East and at Landstuhl Regional Medical Center in Germany (Figure 1)

The modules of instruction, along with other useful tactical medical references, were copied onto compact disks and distributed to students in each class. The entire course was placed on a limited access US Army web site (Army Knowledge Online) so that students could later review materials. The American Burn Association graciously allowed short-term placement of slides from the ABLS course on this web site for student review. In terms of recorded "hits," as of March 11, 2003, the US Army Institute of Surgical Research Army Knowledge Online site was in the top 83 sites of all Army Knowledge Online users.

DISCUSSION

The demands made upon the burn care provider are changing. The military burn care provider may be called upon to treat burn patients for extended

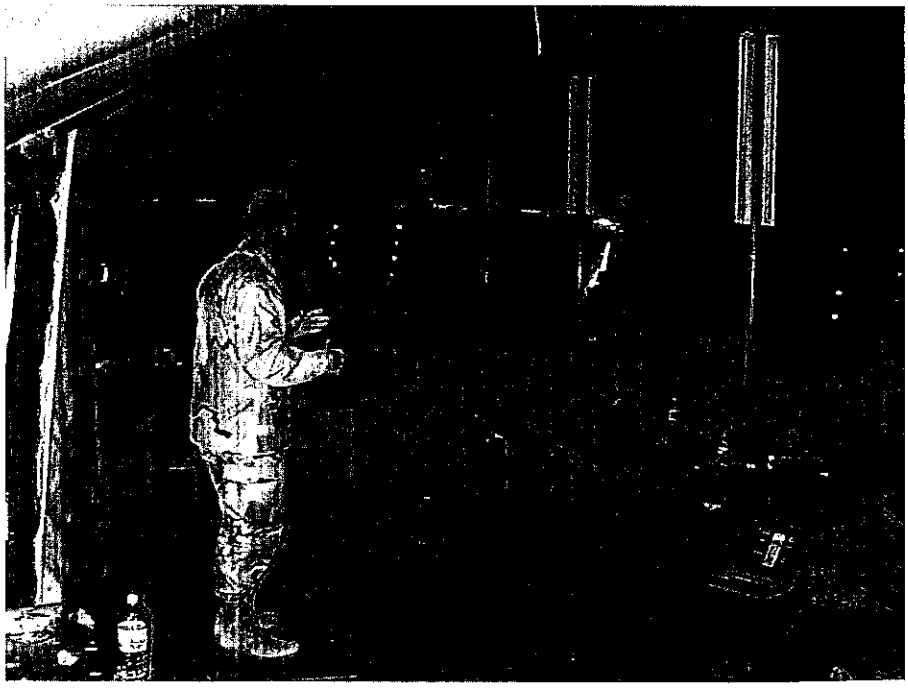

Figure 1. Burn training provided to deployed medical personnel in Kuwait, 2003.

periods of time under austere conditions. Transfer to the "burn center" may involve aeromedical transportation for more than thousands of miles. The possibility of terrorist strikes within the continental United States means that the civilian burn care provider may one day face the triage of hundreds of burn victims, the management of injuries caused by a "dirty bomb," or the victims of a chemical weapons attack. The educational curricula provided to military and civilian burn care teams must reflect these realities.

The Army Burn Center will continue to refine these add-on modules and will complete other modules dealing with mass casualty operations, radiation injuries, and similar topics. A mechanism for dissemination of this coursework to civilian burn care educators is being developed.

REFERENCES

1. American Burn Association. Advanced Burn Life Support course. Chicago: American Burn Association; 2001.
2. Chemical Casualty Care Division. Medical management of chemical casualties. 3rd ed. Aberdeen Proving Ground, MD: US Army Medical Research Institute of Chemical Defense; 2000.
3. Chemical Casualty Care Division. Field management of chemical casualties. 2nd ed. Aberdeen Proving Ground, MD: US Army Medical Research Institute of Chemical Defense; 2000.